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SCOTTISH GRAVERS OF FLINT AND OTHER STONES.

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A considerable bibliography is devoted to the prehistoric graver, but the monograph of the late Capitaine Maurice Bourlon, published in 1911, remains as the standard work on this implement and its principal variations, which occupied so important a place in Upper Palæolithic cultures.¹ Although discoveries made in the last quarter of a century have added materially to knowledge by bringing to light certain types, the student of stone industries turns to Bourlon's treatise as the chief reference. Works in the English language solely given up to the tool are limited in number, the best known and most often quoted being a contribution by Mr Miles C. Burkitt to the *Proceedings of the Prehistoric Society of East Anglia*, vol. iii., part ii., pp. 306-10. The same author also discusses the subject in his text-book.² Lately, Mr N. V. Noone advanced an elaborate classification resulting from long collaboration with Mr H. H. Kidder.³ The inquirer is referred to these and the various works of foreign prehistorians. Some archæologists at home and abroad have assiduously studied and practised the production of graters to determine the technique of prehistoric man in making the peculiar implements.⁴

Certain stone artifacts belonging to very early culture-phases have been claimed as graters, but it is in the different divisions of the Upper Palæolithic that they abound to such extent as virtually to constitute the type tools of the stone industries. They may well have served a number of uses other than carving bone and incising realistic and conventional designs upon the walls of caves, rocks and tablets.⁵ These tools degenerated towards the close of the Magdalenian and with the

¹ "Essai de classification des burins, leurs modes d'avivage," in *Revue Anthropologique*, tome xxi. pp. 267-78.

² *Prehistory* (2nd Edition), pp. 68-71.

³ *Journal of the Royal Anthropological Institute*, vol. ixiv. pp. 81-92.

⁴ To M. Léon Coutier, of Noisy-le-Sec (Seine), prehistorians owe a lasting debt of gratitude for having shown, by experiments, carried over a number of years, different methods of producing stone implements. Without doubt he has successfully recaptured a number of prehistoric techniques, and the methods adopted by him in the manufacture of artifacts have solved many problems.

Among the most important of his long researches are to be included M. Coutier's experiments in making graters. His displays before the Société Préhistorique Française are commented on from time to time in its *Bulletin*.

⁵ A suggestion, which ought not to be overlooked, has been advanced that graver-ended implements may have been employed as "fabricators" for retouching or pressure-trimming. Without

decadence of art productions, but graters survived through Mesolithic and even into later stone industries. Although gradually becoming rarer in late industries their presence suggests bone-working or such operations as the cutting of lines on stone or other substances. As instruments primarily intended in Upper Palæolithic times for carving, true graters could be dispensed with in the simpler work of the later culture-phases which usually involved no more than the mere cutting of materials and producing lines.

Compared with their Palæolithic forerunners the relatively uncommon graters of late stone industries are generally inferior and rudimentary. This is particularly noticeable in industries, pure, hybrid or mixed, showing a survival of tradition; still, carefully wrought specimens are occasionally met with in these.

The essential characteristic of the graver is the chisel-edge formed by the meeting of two bezels, single or multi-faceted, at the extremity of a flake or blade, or sometimes of a core lending itself to suitable treatment. To produce the simple or "ordinary" graver (Fr. *burin bec-de-flûte*) one or more small flakes must be detached obliquely from each side of a flake or blade.¹ Thus, what is in reality the intersection of striking-platforms imparts a much more efficient and durable working tip than the flat or conical ends of such tools as borers. Moreover, the chisel-edge enables the operator to perform certain work impossible with narrow points. Stones, conveniently edged by nature, broken implements, flakes and blades, or cores terminating appropriately, were also used as graters; because, to render them quite serviceable they needed little or sometimes no treatment beyond the provision of the easily produced graver-facet.²

Multi-faceted graters with convex cutting-edges, required for a concave or gouge cut (as opposed to the V-shaped cut of the ordinary graver), were generally made from very thick flakes or even cores. But among graters derived from thick flakes and cores are some suitably treated for making a deep V-shaped cut.³

stressing this, it may nevertheless be said that the wear evident on numbers of stone implements, typologically classifiable as graters, indicates that many were used upon material less tractable than osseous substances and harder than the cave-walls and rocks upon which graters served as mentioned.

¹ *E.g.* No. 1, fig. 4, and Appendix, p. 190.

² *E.g.* Nos. 3 and 8, fig. 4, and Appendix, pp. 190 and 192.

³ As the facets deliberately produced at the working-end of graters, fashioned in these stones best responding to intentional blows and most clearly showing fracture features, bear a slight depression which is in fact a hollow of percussion, graver-facets were assumed to have been obtained by direct downward blows upon the end of the material under treatment. Inquirers, however, have raised objections against the assumption that graters were prepared in this manner: they say that it is a difficult operation and the occasion of injury to the operator's fingers or of damage to

Perusal of an article on Yorkshire gravers by Mr Francis Buckley,¹ bringing us nearer the country with which we are concerned, suggested a line of research in Scotland, where tools of this kind had received little attention. Probably the reason for this disregard is because few students have ready access to collections from Upper Palæolithic sites yielding these implements in numbers, the handling of which would make them familiar with different types. My own identification of an unmistakable graver in a collection of Scottish stone implements was an added incentive to pursue an investigation in the hope of showing that artifacts classifiable

flake or blade. Expert flint-workers hold that these objections are unsound, because anyone who has acquired the skill to fashion stone implements experiences no difficulty in making the graver blow as he can strike exactly where desired. In this connexion Professor A. S. Barnes has shown me that he can make gravers, using hammers of quartzite, other hard stones or even metal, without injuring the end.

The direct blow method must certainly have been used in the manufacture of thick multi-faceted gravers; but in the making of simpler gravers, with but one or two lateral facets obliquely truncating thin flakes or blades, another procedure may also have been adopted. Experiments support this opinion, as M. Coutier's tests go to show an extremely simple way of striking off lateral spalls from a flake or blade. His process consists of smartly hitting with a baton of hardwood, antler or bone upon the side of a flake or blade held in an inclined position on an anvil of a stone softer than that being treated. A blow fairly dealt will detach a spall equal in length to the distance between the spot struck by the hammer and the end of the flake or blade impinging upon the anvil. The force is shared equally between the hand and the end of the graver in the making in contact with the anvil-stone. Actually it is equivalent to striking the end of the flake or blade, but the blow is given by the piece under treatment forcibly striking the anvil (equivalent in this case to a hammer), instead of the hammer striking the graver. The effect of the anvil's being of soft stone is to give diffused bulbs of percussion on the spall detached, and, of course, the flake-scar on the graver shows a corresponding hollow. These features may be considered as normal bulbs and hollows of percussion, but with this particular technique they result from the sudden arresting by the anvil of the fracturing force. This side-blow method invariably results in obtaining a perfectly clean graver-facet, whereas it is often found that to get a good graver-facet by the direct downward blow system the piece has to be struck more than once. Specimens figured here seem to afford instances of such failures.

That many graver-spalls bear salient bulbs of percussion would point to the practice of prehistoric man (necessarily an expert in making stone tools and presumably cognisant of the best methods to follow in implement manufacture) of using the direct blow in fashioning gravers or placing the graver in the making upon an anvil of hard stone. In this respect it may be mentioned that at the Solutrean station of Badegoule (Dordogne) Dr André Cheyrier has recovered pieces of hard stone with abrasions in the centre, apparently caused by repeated percussion as if they had served as anvils in the making of gravers. Other Upper Palæolithic sites have yielded similarly pitted anvils of hard and soft stone, possibly employed in the production of such instruments.

Without detracting in any way from Coutier's admirable discovery, it is thought that his method cannot have been the usual one of prehistoric man, because so many gravers, even thin ones, are short and there would not be room for striking between the fingers and the end of the graver. Scottish examples known to the present writer mostly appear to derive from the direct blow process.

It has to be added in regard to the thick gravers already mentioned that, as the force of the side-blow and anvil method is only half that of the direct downward blow, it would be extremely difficult to strike off spalls in this way.

¹ *Proc. Prehistoric Society of East Anglia*, vol. iii., part iv., pp. 542-7. An angle-graver, preserved in the National Museum, is figured for comparison by this author, p. 546, fig. 2 (g). Its provenance has not been determined, but in size and form it is like some examples identified in Tweedside lots. It resembles the artifact represented by No. 5, fig. 1, here.

as gravers existed in some numbers north of the Border. Besides, the Abbé H. Breuil, when referring to a lot of stone implements from the 25-30 feet Raised Beach at Campbeltown, preserved in the National Museum, remarked that, as he had recognised a flake among them as one detached in the manufacture of a graver,¹ examples of the tool should be found.² With these premises, therefore, the prospect of determining a fairly wide distribution of gravers in Scotland appeared favourable. Though continuous inquiry has not been rewarded by many examples, enough chisel-ended tools have been found to justify reference to stimulate further research.

As a whole the specimens are poor and their variety limited, a fact not altogether strange when their associations and the material available for tool-making in some districts are considered. While gravers have been noticed among sets which include microliths, examples have also been recognised in more easily datable contexts; and some have turned up in unexpected circumstances. Several, identified in general collections, are but surface finds, and therefore cannot be strictly dated.

My experience proves that gravers should be most keenly sought in Scottish collections of stone implements comprising microliths. When gravers occur in a microlithic industry they are among the largest of the artifacts. This holds in Scotland, but the figured examples from sites yielding microliths are small compared with most gravers found in other countries. In Scotland this fact is undoubtedly due to the scarcity of goodly sized material, and cannot be explained merely by a theory that there was a real call for diminutive tools of this type. Considering the probable uses of these tools it is evident that very small gravers are not readily manageable.

Tweedside, a region rich in microliths, furnishes the majority of the gravers identified, and these mostly of green chert. From this rock, occurring usually in small nodules, only small flakes could be struck. A similar observation may be made with regard to flint implements from this district. On Deeside, however, man was decidedly more fortunate in the exercise of some choice in his raw material: and, in connection with the artifacts presently concerning us, this is borne out by the fact that fairly large gravers of flint have been picked out in a collection from Banchory, consisting mainly of microliths worked in this sort of stone.³

¹ *Proc. Soc. Ant. Scot.*, vol. lvi. p. 263, and No. 8, fig. 2, here.

² It was with gratification I was able last summer to show M. Breuil the greater number of the specimens figured in these pages.

³ Miss Hilda M. Leslie Paterson and A. D. Lacaille in *Proc. Soc. Ant. Scot.*, vol. lxx. pp. 430-1.

Forms of graters have been remarked among stone artifacts from the Orkneys on the one hand, and the southern and south-western counties on the other. That inspection of a few collections should also have revealed the presence of implements with chisel-like working-ends in lots from regions situated between leads me to believe that other persons, with greater facilities than are now mine, will establish a wider distribution.

In his paper Mr Buckley mentions *micro-burins* as well as true graters,¹ but it is thought that (apart from the necessary inclusion of the former in any description of a microlithic industry in which they may occur) it is advisable to reserve detailed reference to Scottish *micro-burins*, despite their grater-like attributes, to a notice more closely confined within the limits of a study of stone-fracture. Illustrations embodied in the work on Yorkshire graters show how closely some of the specimens resemble artifacts drawn for the notes now laid before the Society. Many of the Scottish specimens are peculiar, but all bear the distinguishing features of a deliberately produced chisel-edge. In examining the implements figured, the materials in which some are fashioned must be taken into account as these are not devoid of interest. Not only must the raw material—often indifferent—be considered, but it has to be remembered that most of the artifacts consist of surface finds. As such many have been damaged by accidents to which the circumstances of their situation exposed them throughout the ages.

While inquiries make it clear that graters are scarce in Scotland, there do occur some stone implements terminating like narrow chisels which merit record. Although many of these artifacts might be included in this paper, comment and figures are limited meantime to a selection. Some of the specimens included in this possess the more characteristic and recognisable features. The two principal illustrations show simple examples and variants, also spalls presumed to have been removed in the production or re-working of graters (figs. 1 and 2).

Personal examination of specimens gives me reason to think that angle-graters are the commonest type of chisel-ended implements in Scottish collections from localities where microliths have been found.²

¹ *Loc. cit.*, p. 543.

² Angle-graters are comparatively numerous in the Mesolithic industries from Continental regions of utmost interest to Scottish geologists and archaeologists, so many important representative series from which are illustrated by Dr J. G. D. Clark in his *The Mesolithic Settlement of Northern Europe*. The presence of these tool-types in Scotland suggests that, however late or mixed many of the Scottish microlithic industries may be, they are the products of peoples who had adopted many forms to answer certain needs.

All the pieces composing fig. 1 are tools with simple cutting-edges. Of these, No. 1 alone has the graver-facet backed against a trimmed

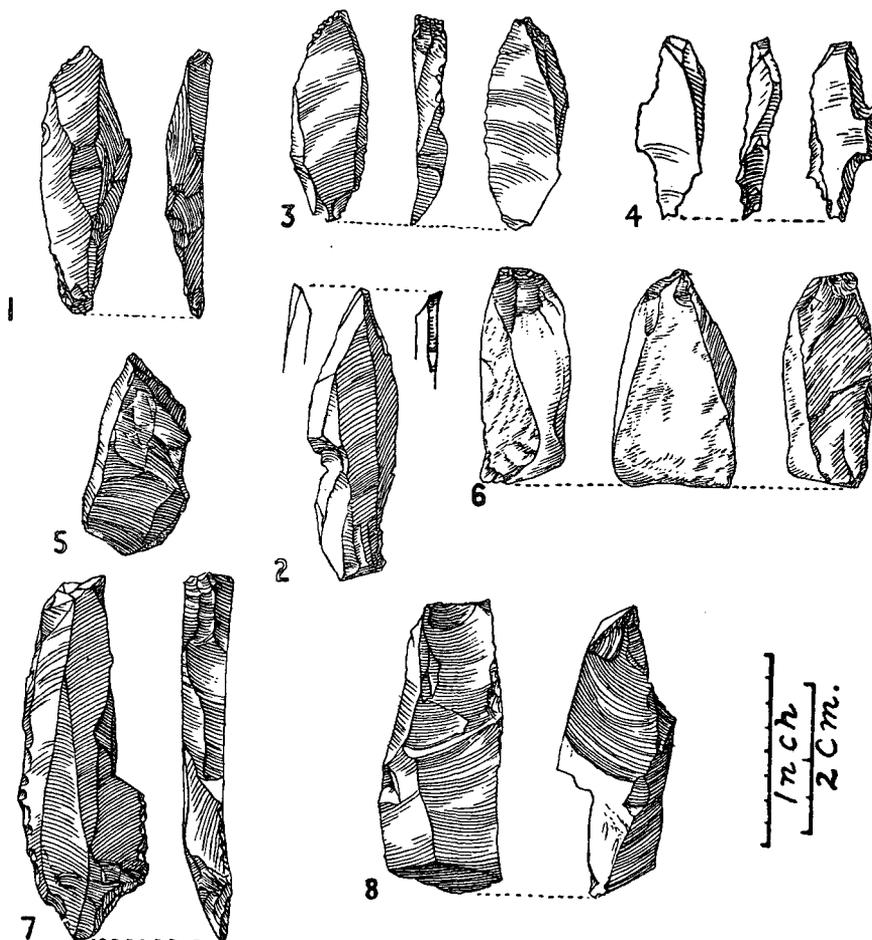


Fig. 1. Scottish Gravers.

edge; the others are faceted on one or both sides. They are detailed as follows:—

No. 1. On blade, triangular in section, struck from a core; of light flint; one graver-facet on right backed against a trimmed edge; extremity defective; $1\frac{2}{3}$ inch (0.036 m.) long. Found by Dr W. A. Munro near Dryburgh, Mertoun, Berwickshire.

No. 2. Single-blow graver, worked at end of blade of light flint struck from core; a narrow graver-facet on right backed against narrow

remaining portion of flake-facet on left; trimmed on the right at lower end. The graver-facet appears to have been obtained by the side-blow and anvil method. Length, $1\frac{1}{2}$ inch (0.038 m.). Found on Shewalton Moor, Ayrshire.

No. 3. On flake of light flint struck from a core; two facets on right meeting a single facet; cutting-edge worn rather than injured in the making; $1\frac{2}{3}$ inch (0.028 m.) long. Found by Mr Ian Muirhead at Geddens, Ballantrae, Ayrshire.

No. 4. Fashioned from flake of light brown flint; two small facets across top, produced after detaching lengthwise one spall on right, meeting an oblique facet on other side; $\frac{1}{8}$ inch (0.024 m.) long. Found by Miss H. M. Leslie Paterson near Birkwood, Banchory, Kincardineshire.¹

No. 5. Simple angle-graver, on thick flake of green chert; cutting-edge formed by meeting of two facets on right and one on left; $1\frac{1}{8}$ inch (0.027 m.) long. Found by Mr C. J. Brown at Dryburgh, Mertoun, Berwickshire.

No. 6. Pebble of hyaline quartz treated at one end by faceting to a chisel-edge. The hollows of percussion show some fissures, and the sharp edge appears slightly injured. These features are probably due to the nature and erratic fracture of this material, in this case of poor quality. Along the sides, however, the facets are uniformly clean. Length, $1\frac{5}{8}$ inch (0.029 m.). Found by Dr W. J. M'Callien within the 25-30 feet Raised Beach at Campbeltown, Argyll, with artifacts which will duly be described.

No. 7. Worked at end of truncated thick flake of light yellowish-grey flint struck from a core; one thick spall removed on the right, and the facet so produced treated by detaching three tiny and narrow flakes. Across the top one spall was detached, the meeting of the facets giving the desired cutting-edge, now somewhat injured. Near the lower end of the tool there is some trimming on the right. Length, $1\frac{2}{3}$ inch (0.048 m.). Found by Miss H. M. Leslie Paterson near Birkwood, Banchory, Kincardineshire.²

No. 8. Thick specimen, of dark purplish-brown chert; apparently remainder of a core with a long facet on the left incurving at one end to the right against which is backed a short graver-facet. The edge is still sharp and serviceable. Length, $1\frac{1}{2}$ inch (0.038 m.). Found by Dr W. A. Munro near Dryburgh, Mertoun, Berwickshire.

Grouped in the next set (fig. 2), of which details follow, are different forms of implements and two narrow flakes or spalls, doubtless detached in the making of gravers.

No. 1. Double graver in portion struck from a nodule of green chert of indifferent quality, the upper surface retaining much of the brown cortex; working-edge at one end formed by intersection of one long facet on the right backed against a shorter on the left. The other end shows two scars indicating secondary removal of a spall. The lower facet meets another produced on the left through the crust. Specimen

¹ *Proc. Soc. Ant. Scot.*, vol. lxx. pp. 430-1.

² *Ibid.*

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measures $1\frac{1}{32}$ inch (0.031 m.) in length. Found by Dr W. A. Munro near Dryburgh, Mertoun, Berwickshire.

No. 2. Double graver worked in thick triangular piece of a flake

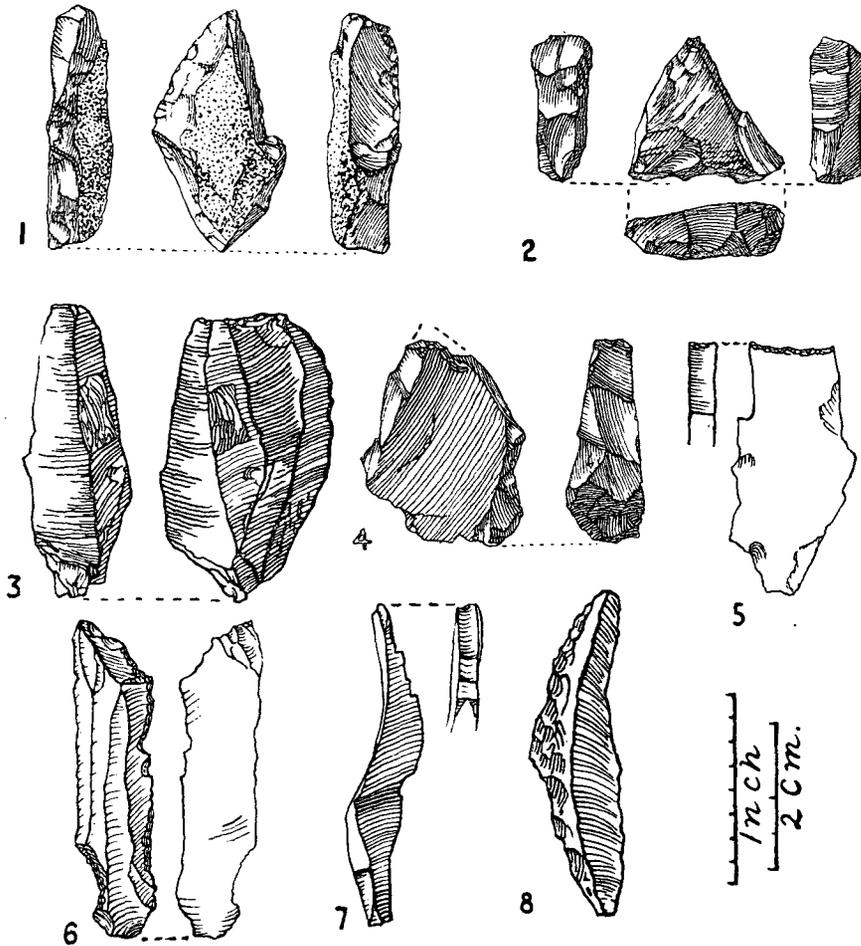


Fig. 2. Scottish Gravers.

of mottled and banded grey flint; chisel-edge at top formed by a graver-facet on the right backed against the faceted vertical left edge. The right side meets the faceted vertical edge at the base in a graver-facet, the intersection giving a working-edge; $\frac{1}{8}$ inch (0.02 m.) by $\frac{1}{8}$ inch (0.02 m.). Found by Mr Thomas Linklater, South Ettit, Rendall, Mainland of Orkney.¹

¹ Robt. Rendall in *Proc. Orcadian Antiquarian Society*, vol. xiv. pp. 48-51.

No. 3. Angle-graver, light grey cherty flint; the intersection of a facet extending almost the full length of left side with a trimmed edge at top forming cutting-edge; $1\frac{1}{2}$ inch (0.038 m.) long. From excavation of long stalled cairn, the Knowe of Yarso, Rousay, Orkney. Figured after J. Graham Callander and Walter G. Grant.¹

No. 4. Although the greater part of the graver-facet remains on the left of this angle-graver, the edge opposite which meets it is so bruised and injured, apparently by fire-action, that the actual chisel-edge is now wanting. The specimen is of grey banded flint of poor quality and now measures $1\frac{5}{8}$ inch (0.029 m.) in length. Found by Mr Thomas Linklater at South Ettit, Rendall, Mainland of Orkney.²

No. 5. Angle-graver on flake of light grey chert flint; chisel-edge formed by meeting of long facet with a slightly concave trimmed edge at the top; $1\frac{5}{8}$ inch (0.033 m.) long. From Freswick Bay, Caithness, and now preserved in the National Museum.

No. 6. An implement resembling a typical flat graver (*burin plan*), worked in a blade of dark grey flint struck from a core; steeply trimmed along parts of two long sides to form at bulbar end of upper surface a slight concave edge and opposite a long cutting-edge now partly injured. A chisel-like edge is provided at the top by the removal of four small flakes at the extremity on the bulbar face. This artifact is $1\frac{3}{4}$ inch (0.047 m.) in length. Found by Miss H. M. Leslie Paterson near Birkwood, Banchory, Kincardineshire.³

No. 7. Narrow flake of dark grey flint, presumably detached in the fabrication or re-working of a graver, three blows having been necessary to strike off this piece from the material under treatment. This specimen affords a good instance of a flake removed by a direct blow dealt by a hard percussion tool upon the end of a thick flake or blade. In length this specimen measures $1\frac{1}{8}$ inch (0.043 m.). Found by Miss H. M. Leslie Paterson near Birkwood, Banchory, Kincardineshire.⁴

No. 8. Flake of grey flint, identified by the Abbé H. Breuil as one detached from a batter-trimmed flake or blade in the manufacture of a graver; $1\frac{1}{8}$ inch (0.043 m.) long. Among hoard of stone artifacts found within the 25-30 feet Raised Beach at Campbeltown, Argyll, and now preserved in the National Museum.⁵

A remarkable implement from Whitrighill, Mertoun, Berwickshire, in the collection of Mr C. J. Brown, although not possessing any true graver-facets, is figured as an artifact trimmed to a chisel-edge (fig. 3). As such it has a place in these notes. The curious specimen is an example of a tool fashioned in the only local raw material found suitable and tractable enough for making a special instrument of comparatively large size required for some special need.⁶ Besides the peculiarity of

¹ *Proc. Soc. Ant. Scot.*, vol. lxix. pp. 335 and 337.

² Robt. Rendall, *loc. cit.*

³ *Proc. Soc. Ant. Scot.*, vol. lxx. p. 431.

⁴ *Ibid.*, p. 430.

⁵ *Cit. supra*, p. 183.

⁶ Mr Brown and others have already found in this district some large implements made of quartz and quartzite, rocks which occur here, as in many other parts of Scotland, in the form of pebbles and cobbles.

workmanship is the interest it offers as an implement of rudimentary appearance. It consists of a pebble of dark fawn jaspilite with carmine marbling, $\frac{2}{3}\frac{7}{2}$ inch (0.022 m.) thick at the lower end, $2\frac{1}{16}$ inches (0.071 m.) long and $2\frac{5}{32}$ inches (0.055 m.) wide. The flattish nether surface shows faint flake-scars of natural origin. From the dressed areas it appears that jaspilite is not so responsive to intentional blows as the local chert, but as it is certainly a rock with some of the properties of conchoidal

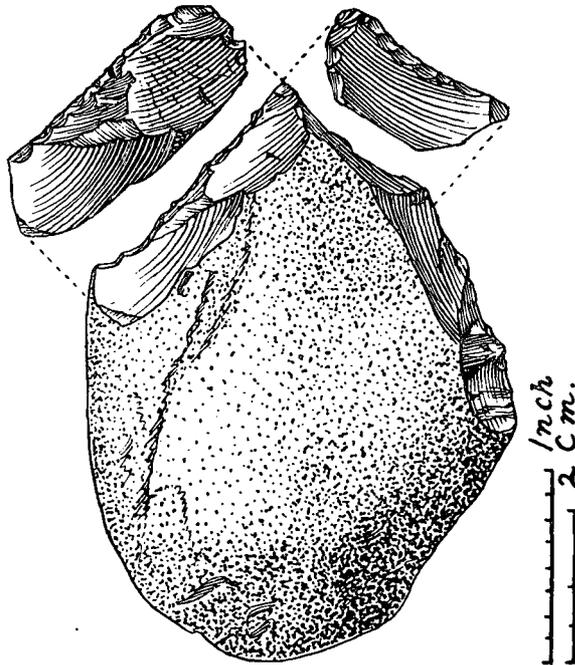


Fig. 3. Jaspilite Chisel-ended Tool from Whittrighill, Mertoun.

fracture, a degree of control could be exercised by the craftsman; in this regard it seems much superior to most grades of quartzite. The edges attest that quite a number of strokes were necessary to remove even small flakes, the scars of which now show a certain amount of weathering. The naturally rounded form of this pebble-tool comfortably suits the grip. The implement seems to have seen considerable service although the working-edge is still sharp.

It would be ungrateful of me to conclude without expressing my sense of indebtedness to friends who so kindly allowed me to examine their collections and figure chosen specimens. These, it is believed,

add to knowledge by demonstrating that the products of Scottish stone industries comprise a class of artifacts with features akin to those possessed by tools which fall into a well-defined category.

APPENDIX.

The Scottish implements terminating in narrow chisel-edges may be compared with some typical gravers from classic French sites (fig. 4). Illustrations of these, mostly extracted from Bourlon's work, are shown, as it is thought that drawings of certain forms, which some Scottish ones resemble, will serve in the identification of further examples to amplify the brief personal record in the foregoing pages. The French gravers figured here are fashioned in that excellent and responsive siliceous material of the Périgord district, which usually occurs in nodules larger than is the case with the different stones of this country. Even in the representations of the greater number of the Scottish artifacts, whose character is apparent, the inferior quality of the native rocks manifests itself.

It would be vain to endeavour to press an analogy between the Scottish specimens and the enormously more ancient French palæoliths which belong to culture-phases unknown in Scotland. Nevertheless, an attempt is made to show from a selection of Continental instances the typical features borne by this specific category of stone tools. These traits are also discernible in the Scottish implements, although generally diminutive and manufactured in substances rarely comparable in point of tractability. Characteristic Palæolithic specimens have advisedly been taken rather than a choice of less typical gravers belonging to industries nearer our own in respect of age.

On account of the endless variety of forms and combinations assumed by the gravers of Palæolithic cultures, the foreign specimens as sketched must be taken only as comparative examples in this study. In the enumeration of the individuals of the series the features of the Scottish implements may be set against those characteristics which distinguish the French pieces figured as types.

No. 1. "Ordinary" (*bec-de-flûte*) graver; single graver-facet backed against single graver-facet; Aurignacian; Abri de Masnaigre, Marquay (Dordogne). After Bourlon.¹ To show essential characteristics of a simple graver.

No. 2. Graver fashioned at end of a blade trimmed to a point; single graver-facet backed against a trimmed edge; Aurignacian; Abri de Masnaigre, Marquay (Dordogne). After Bourlon.² Cf. No. 1, fig. 1.

No. 3. Single blow graver; a single graver-facet backed against a flake-facet; Aurignacian; Abri de Masnaigre, Marquay (Dordogne). After Bourlon.³ To show simply improvised tool. Cf. No. 2, fig. 1.

¹ *Revue Anthropologique*, tome xxi. p. 268, and No. 1, fig. 2, p. 269.

² *Ibid.*, p. 270, and No. 12, fig. 2, p. 269.

³ *Ibid.*, p. 270, and No. 14, fig. 2, p. 269.

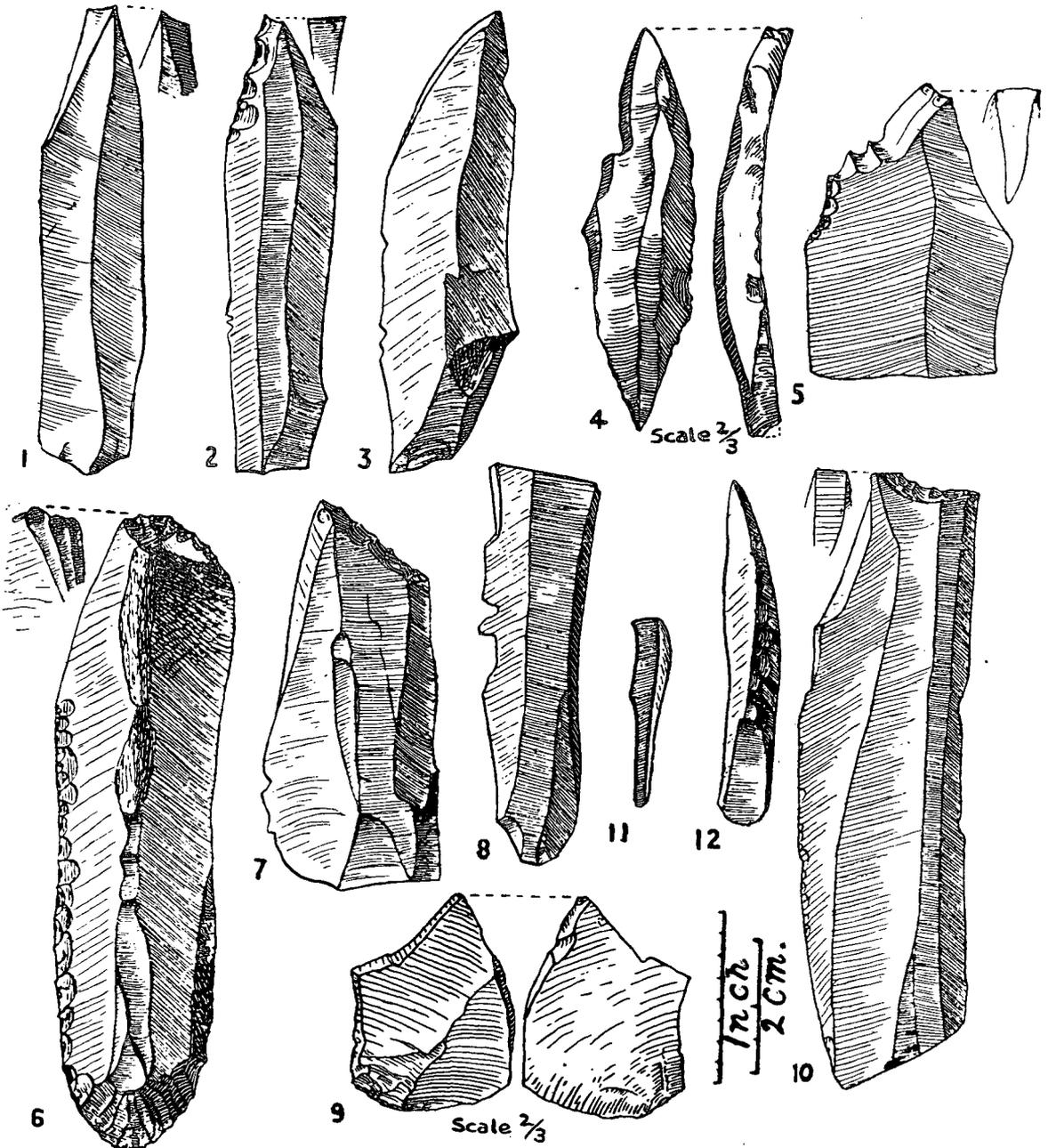


Fig. 4. French Gravers for Comparison.

No. 4. Double "ordinary" graver; each end comprising a cutting-edge formed by a graver-facet backed against a graver-facet; Magdalenian; La Grotte des Eyzies, Les Eyzies-de-Tayac (Dordogne). After British Museum Guide.¹ Cf. No. 1, fig. 2.

No. 5. Reworked graver; two graver-facets backed against a single graver-facet; Aurignacian; Abri de Cro-Magnon, Les Eyzies-de-Tayac (Dordogne). After Bourlon.² Cf. Nos. 3, 4, and 5, fig. 1.

No. 6. Flat graver (*burin plan*); three small facets at one end on bulbar face forming edge with the trimming on upper surface; the other extremity dressed to end-scraper; Aurignacian; Abri de Masnaigre, Marquay (Dordogne). After Bourlon.³ Cf. No. 6, fig. 2.

No. 7. Oblique angle-graver; graver-facet backed against the trimmed uppermost edge of a truncated blade; Aurignacian; Abri de Masnaigre, Marquay (Dordogne). After Bourlon.⁴ May reservedly be compared with No. 2, fig. 2.

No. 8. Angle-graver on end of a broken blade; single graver-facet backed against convenient edge provided by break; Aurignacian; Abri de Masnaigre, Marquay (Dordogne). After Bourlon.⁵ To show simply improvised tool.

No. 9. Angle-graver. After Delage, by whom ascribed to Mousterian; ⁶ Abri des Merveilles, Castelmerle, Sergeac (Dordogne). Cf. No. 4, fig. 2.

No. 10. Concave angle-graver; graver-facet backed against a trimmed edge at end of blade; Aurignacian; Abri de Masnaigre, Marquay (Dordogne). After Bourlon.⁷ Cf. Nos. 3 and 5, fig. 2.

No. 11. Spall detached from a plain flake or blade in the manufacture of a graver; Aurignacian; Abri de Masnaigre, Marquay (Dordogne). After Bourlon.⁸ Cf. No. 7, fig. 2.

No. 12. Spall detached in the making or re-working of a graver; example removed from a trimmed edge; Aurignacian; Abri de Masnaigre, Marquay (Dordogne).⁹ After Bourlon. Cf. No. 8, fig. 2.

¹ *A Guide to Antiquities of the Stone Age* (1926 edition), fig. 135 and p. 134.

² *Revue Anthropologique*, tome xxi. p. 276, and No. 10, fig. 4, p. 275.

³ *Ibid.*, p. 271, and No. 20, fig. 2, p. 269.

⁴ *Ibid.*, p. 270, and No. 7, fig. 2, p. 269.

⁵ *Ibid.*, p. 270, and No. 11, fig. 2, p. 269.

⁶ *Compte-Rendu du Douzième Congrès Préhistorique de France* (Toulouse and Foix, 1936), p. 600, and No. 72, fig. 14, p. 602.

⁷ *Revue Anthropologique*, tome xxi. p. 275, and No. 2, fig. 4, p. 275.

⁸ *Ibid.*, p. 275, and No. 19, fig. 3, p. 273.

⁹ *Ibid.*, pp. 276-7, and No. 12, fig. 4, p. 275.